

PROJECT NAME

**SECTION 07 14 16**  
**Cold Fluid Applied High Build Protected Membrane Roofing**  
**Henry CM100 PMR**

SPEC NOTE: This Guide Specification includes materials and methods for the application of Henry CM100 High Build System, a 2 ply, a cold applied, moisture cure, solvent free, elastomeric waterproofing membrane system for typical applications including horizontal inverted protected membrane roofing assembly (PMR). This specification is ideally suited for premium performance roofing systems typical of hospitals, schools, and commercial projects. Although prepared in CSI three part format, this specification should be adapted to suit the requirements of individual projects, and should be included as a separate section under Division 7 - Thermal and Moisture Protection

**PART 1: GENERAL**

1.01 GENERAL REQUIREMENTS

- A. The General Conditions, Supplementary Conditions, Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.
- B. The Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work.

1.02 DESCRIPTIONS

- A. Supply labor, materials, tools and equipment to complete the Work as shown on the Drawings Architectural Division as specified herein including, but not limited to the following:
  - 1. Concrete [Wood] [Metal w/sheathing overlay] Roof Deck (by others)
  - 2. Reinforced Cold Fluid Applied Waterproofing Membrane
  - 3. Protection Course/Separation Sheet
  - 4. Drainage Composite
  - 5. Rigid Insulation
  - 6. Filter fabric
  - 7. Pavers

1.03 RELATED WORK

- A. DIVISION 3 - Concrete [Section XXXXXX] - Roof Deck Surface/Substrate  
The coordination of this section is necessary to facilitate the successful installation of the waterproofing membrane.
  - 1. Acceptable substrates:
    - a. Form Release Agents: Contact Henry
    - b. Cast-in-Place Concrete/Composite Deck: Precast Concrete
      - 1. Strength/density: Minimum 2,500 psi (17,235 kPa) compressive strength and minimum 115 pcf (1842 kg/m<sup>3</sup>) density
      - 2. Finish: Broom, wood-float, or wood-troweled equivalent finish. Steel float finishes are too smooth and compromise the adhesion of the waterproofing system. Decks with a steel float finish must be sandblasted or equivalent prior to the application of the waterproofing system.
      - 3. Concrete Hydration (Cure):
        - a. Method of Cure: Water cure, wet coverings, paper sheets, plastic sheets or approved liquid curing compound (sodium silicate preferred).
        - b. Duration of Cure/Dry:
          - 1. Recommend 24 hours minimum after concrete forms have been removed.
          - 2. Contact Henry when less than the minimum is desired.
    - c. Lightweight insulating concrete is not an acceptable substrate.
    - d. Structural lightweight concrete:
      - 1. Metal pan decks to which concrete is poured shall be venting type.
        - a. Contact Henry if metal pan deck is not venting type.
      - 2. Strength/density: Minimum 2,500 psi (17,235 kPa) compressive strength and minimum 115 pcf (1842 kg/m<sup>3</sup>) density
      - 3. Finish: Broom, wood-float, or wood-troweled equivalent finish. Steel float

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finishes are too smooth and compromise the adhesion of the waterproofing system. Decks with a steel float finish must be sandblasted or equivalent prior to the application of the waterproofing system.

4. Concrete Hydration (Cure):
  - a. Method of Cure: Water cure, wet coverings, paper sheets, plastic sheets or approved liquid curing compound (sodium silicate preferred).
  - b. Duration of Cure/Dry:
    1. Recommend 7 days minimum after concrete forms have been removed.
    2. Contact Henry when less than the minimum is desired.

### **\*REFER TO SECTION 3.02 PREPARATION, FOR ADDITIONAL INFORMATION\***

- B. DIVISION 05 Metals [Section XXXXXX] – [Metal decking] [Steel decking]
  1. Acceptable Substrates:
    - a. Metal Deck
      1. Metal pan decks to which concrete is poured must be venting type.
      2. **Contact Henry if metal pan deck is not venting type.**

### **\*REFER TO SECTION 3.02 PREPARATION, FOR ADDITIONAL INFORMATION\***

- C. DIVISION 05 Metals [Section XXXXXX] – Flashing and Sheet
- D. DIVISION 06 Wood, Plastics, and Composites [Section XXXXXX] – Wood Blocking and Curbing
- E. DIVISION 06 Wood, Plastics, and Composites [Section XXXXXX] – Sheathing
  1. Acceptable Substrates:
    - a. Sheathing over [metal decking] [steel decking]
      1. Consult Henry Company for installation recommendations
- F. DIVISION 07 Thermal and Moisture Protection [Section XXXXXX] – Insulation
- G. DIVISION 07 Thermal and Moisture Protection [Section XXXXXX] – Caulking and Sealants
- H. DIVISION 07 Thermal and Moisture Protection Section 073363 - Vegetated Roofing
- I. DIVISION 22 Plumbing [Section XXXXXX] – Specialties
- J. DIVISION 32 Exterior Improvements [Section XXXXXX] - Paving/Site
  1. Furnishings as supplied by Henry Company. See Division 7 for specific details.
- K. DIVISION [] [Section XXXXXX] – LEED Requirements

## 1.04 REFERENCES

- A. The following standards are applicable to this section:
- B. ASTM C 836: High Solids Content, Cold Liquid Applied Elastomeric Waterproofing Membrane
- C. CAN/CGSB 37.58
- D. ASTM E96: Water Vapor Transmission of Materials.
- E. US Green Building Council (USGBC), Leadership in Energy and Environmental Design (LEED) - LEED Reference Guide, Version 3.0, and USGBC Project Calculation Spreadsheet. Web Site <http://www.usgbc.org>.
- F. Miami-Dade NOA

## 1.05 SHOP DRAWINGS

- A. Submit shop drawings in accordance with Section [XXXXXX].

## 1.06 DELIVERY AND STORAGE

- A. Delivery of Materials:
  1. Materials shall be delivered to the jobsite in undamaged and clearly marked containers indicating the name of manufacturer and product.
- B. Storage of Materials:
  1. Cold fluid applied waterproofing should be stored in closed containers outdoors.

## 1.07 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
  1. No Work shall be performed during rain or inclement weather

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2. No Work shall be performed on frost or wet covered surfaces.
- B. Protection:
  1. Temporary protection of the membrane shall be provided to prevent mechanical damage or damage from spillage of oil or solvents until such time as permanent protection is installed.
  2. Do not permit traffic of any kind over unprotected waterproof membranes. Apply protection course as soon as possible in accordance with published literature after waterproofing membrane installation.
- C. Ensure all preparation work is complete prior to installing waterproofing membrane.

### 1.08 SUBMITTALS

- A. Statement that installing contractor is authorized by manufacturer to complete Work as specified.
- B. Copy of manufacturers' current ISO certification.
- C. Manufacturers' complete set of standard details for the waterproofing membrane system.
- D. Certify that waterproofing components are supplied and warranted by single source manufacturer.

### 1.09 QUALITY ASSURANCE

- A. Single-Source Responsibility:
  1. Obtain waterproofing, insulation, and paver assembly components and materials from a single manufacturer regularly engaged in the manufacturing and supply of the specified products.
  2. Contractor to verify product compliance with federal, state and local regulations controlling use of Volatile Organic Compounds (VOC).
- B. Installer:
  1. Perform Work in accordance with manufacturer published literature and as specified in this section.
  2. Maintain one copy of manufacturer's instructions on site.
  3. At all times during the execution of the Work allow access to site by the waterproofing membrane manufacturer's representative.
  4. Mock-Up:
    - a. Contact manufacturer, when required, a minimum of two weeks prior to construction mock up to schedule an on-site meeting.
    - b. Where directed, construct typical assembly incorporating substrate and waterproofing membrane.
    - c. Allow 24 hours for inspection of mock-up before proceeding. Mock-up may remain as part of the work.
- C. All components used in this section shall be furnished by one manufacturer including primary membrane, liquid sealants, primers, mastics, and adhesives.
- D. Primary membrane shall meet ASTM C 836.
- E. Primary membrane shall be resistant to acids (fertilizers, building washes and acid rain).

### 1.10 MEMBRANE MANUFACTURER QUALIFICATIONS

- A. Manufacturer shall demonstrate qualifications to supply materials of this section by certifying the following:
  1. Membrane Manufacturer must not issue warranties for terms longer than they have been manufacturing waterproofing systems.

### 1.11 PRECONSTRUCTION CONFERENCE

- A. When required, and with prior notice, a representative of the waterproofing/roofing membrane manufacturer will meet with the necessary parties at the jobsite to review and discuss project conditions as it relates to the integrity of the waterproofing assembly.

### 1.12 ALTERNATES

- A. Submit requests for alternates in accordance with Section [XXXXXX].
- B. Alternate submission format to include:
  1. Evidence that alternate materials meet or exceed performance characteristics of Product requirements and documentation from an approved independent testing laboratory certifying that the performance of the waterproofing membrane system

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including drain boards and transition membranes exceed the requirements of the local Building Code.

- 2. Copy of manufacturers' current ISO certification.
- 3. References clearly indicating that the membrane manufacturer has successfully completed projects on an annual basis of similar scope and nature for a minimum of five (5) years.
- 4. Manufacturers' complete set of standard details for the waterproofing membrane systems showing a continuous plane of water tightness throughout the building envelope.
- C. Submit requests for alternates to this specification a minimum of ten (10) working days prior to bid date. Include a list of 25 projects executed over the past five (5) years.
- D. Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to tender closing shall not be permitted for use on this project.

1.13 WATERPROOFING MEMBRANE WARRANTY

SPEC NOTE: There are three warranty configurations available from Henry. Choose 1.13.A, 1.13.B or 1.13.C from the following. Note that charges apply to certain warranties and scope of coverage varies.

- A. Manufacturer's Material Warranty:
  - 1. Contractor must warranty that the waterproofing membrane and membrane flashings will stay in place and remain leak proof for two years.
  - 2. Waterproofing membrane manufacturer must warranty the membrane and membrane flashings for leak coverage as a result of faulty materials for a period of [5 years] [10 years] [15 years] [20 years] from the date of substantial completion.
- B. Manufacturer's Single Source System Warranty:
  - 1. Contractor must warranty the waterproofing membrane and membrane flashings for leak coverage for two years.
  - 2. Waterproofing membrane manufacturer must warranty the membrane and membrane flashings for leak coverage as a result of faulty materials for a period of [5 years] [10 years] [15 years] [20 years] from the date of substantial completion.
  - 3. Insulation shall retain 80% of its thermal value for the duration of the membrane warranty.
  - 4. Pavers shall not split, crack or disintegrate prematurely due to freeze-thaw cycling for the duration of the membrane warranty to a maximum of ten years.
- C. Manufacturer's Single Source Gold Seal Warranty:
  - 1. Contractor must warranty the waterproofing membrane and membrane flashings for leak coverage for two years.
  - 2. Waterproofing membrane manufacturer must warranty the membrane and membrane flashings for leak coverage as a result of faulty materials or workmanship for a period of [5 years] [10 years] [15 years] [20 years] from the date of substantial completion.
  - 3. Insulation shall retain 80% of its thermal value for the duration of the membrane warranty.
  - 4. Pavers shall not split, crack or disintegrate prematurely due to freeze-thaw cycling for the duration of the membrane warranty to a maximum of ten years.

**--CONTACT HENRY FOR WARRANTY TERMS AND CONDITIONS DETAILS --**

**PART 2: MATERIALS**

2.01 MANUFACTURER

- A. Components and membrane materials must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.
  - 1. Acceptable Manufacturer:
    - Henry Company
    - 999 N Sepulveda Blvd, Suite 800
    - El Segundo, CA 90245
    - (800) 598-7663
    - [www.Henry.com](http://www.Henry.com)

2.02 PRODUCTS

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- A. PRIMARY WATERPROOFING MEMBRANE (Basis-of-Design)
1. CM100 supplied by Henry Company consisting of a fast curing, one component elastomeric, solvent free, moisture cure waterproofing compound designed to provide a seamless waterproofing membrane or a cold alternative to hot applied rubberized membrane systems, and having the following physical properties:
    - a. ASTM C836
    - b. CAN/CGSB 37.58
    - c. Miami-Dade NOA
    - d. Solids Content: +97%
    - e. Low Temperature Flexibility and Adhesion: No cracking, delamination or loss of adhesion @ 13 degrees F (-10 degrees C)
    - f. Flash Point (Open Cup): >450 degrees F (>232 degrees C)
    - g. Maximum V.O.C. <40 grams/liter
    - h. Elongation (ASTM D412): 575%
    - i. Recovery (ASTM D412): 95%
    - j. Shore A Hardness (ASTM C661): Minimum 60
    - k. Adhesion in Peel after Water Immersion (ASTM C836): Pass
    - l. Water Vapor Permeance (ASTM E96):
      1. Procedure A (Dry Cup): 0.054 perms (3.09 ng/Pa m<sup>2</sup> sec)
      2. Procedure B (Inverted Wet Cup): 0.36 perms (20.6 ng/Pa m<sup>2</sup> sec)
    - m. Low Temperature Crack Bridging Capability: No cracking, No splitting, No loss of adhesion
    - n. Flammability Wet: Non-flammable
    - o. Hydrostatic Pressure Resistance (ASTM D5893): 100 psi (0.69 MPa)

SPEC NOTE: There are options for exposed and non-exposed flashing membranes. For enhanced performance at penetrations, perimeter-flashing, and areas that require UV resistance and traffic-ability Henry recommends the use of AQUA-BLOC® PUMA. For liquid-applied flashing system choose 2.02B.1. For Elastomeric Sheet flashings choose 2.02B.2 membrane options.

- B. Flashing Membranes:
1. Liquid-Applied Flashing System AQUA-BLOC® PUMA System supplied by Henry Company with catalyst mix and application rates per product technical data sheet, and consisting of:
    - a. AQUA-BLOC® PUMA Primer or AQUA-BLOC® PUMA Early Prime
    - b. AQUA-BLOC® PUMA Resin
    - c. AQUA-BLOC® PUMA Catalyst
    - d. AQUA-BLOC® PUMA Fleece
  2. Elastomeric Sheet flashings consisting of:
    - a. 990-25 Elastomeric Flashing Sheet Unreinforced supplied by Henry Company having a flexible flashing membrane composed of combination of butyl and EPDM polymers having the following physical properties:
      1. Tensile strength (ASTM D412): 210 kN/m (1200 lbf/in.)
      2. Tear resistance (ASTM D624): 26 kN/m (150 lbf/in.)
      3. Elongation (ASTM D412): 500%
- C. Expansion joints:
1. 990-25 Elastomeric Flashing Sheet Unreinforced supplied by Henry Company having a flexible flashing membrane composed of combination of butyl and EPDM polymers having the following physical properties:
    - a. Tensile strength (ASTM D412): 210 kN/m (1200 lbf/in.)
    - b. Tear resistance (ASTM D624): 26 kN/m (150 lbf/in.)
    - c. Elongation (ASTM D412): 500%
- D. Crack Treatment:
1. Polyester Fabric unsaturated spun bonded polyester mat reinforcement sheet as supplied by Henry Company having the following physical properties:
    - a. Grab tensile strength: MD (24 lbs.) 107N; XMD (22 lbs.) 98N
    - b. Trapezoid Tear: MD (8.5 lbs.) 38N; XMD (8.5 lbs.) 38N
    - c. Mullen Burst: 117 kPa (17 psi)

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- d. Thickness: 0.2 mm (8 mils)
- 2. 990-25 Elastomeric Flashing Sheet Unreinforced supplied by Henry Company having a flexible flashing membrane composed of combination of butyl and EPDM polymers having the following physical properties:
  - a. Tensile strength (ASTM D412): 210 kN/m (1200 lbf/in.)
  - b. Tear resistance (ASTM D624): 26 kN/m (150 lbf/in.)
  - c. Elongation (ASTM D412): 500%
- E. Fabric Reinforcement:
  - 1. Polyester Fabric unsaturated spun bonded polyester mat reinforcement sheet as supplied by Henry Company having the following physical properties:
    - a. Grab tensile strength: MD (24 lbs.) 107N; XMD (22 lbs.) 98N
    - b. Trapezoid Tear: MD (8.5 lbs.) 38N; XMD (8.5 lbs.) 38N
    - c. Mullen Burst: 117 kPa (17 psi)
    - d. Thickness: 0.2 mm (8 mils)

**SPEC NOTE: Select from the following protection course options. Exception: When overburden will consist of asphalt concrete pavement, a minimum 1/8" thick, semi-rigid asphaltic protection board shall be used.**

- F. Protection Course:
  - 1. GR08 Protection Fabric is a non-woven geotextile fabric made up of 100% post-consumer recycled material.
    - a. Thickness: 120 mils
    - b. 100% post-consumer recycled polyester fabric
    - c. Apparent opening Size (AOS) (ASTM D 4751): 80 US Sieve
    - d. Grab Strength (ASTM D 4632): 200 lbs.
    - e. Mullen Burst (ASTM D 3786): 350 psi
    - f. Puncture Strength (ASTM D 4833): 110 lbs.
    - g. Tensile Elongation (ASTM D 4632): 50%
    - h. Trapezoid Tear (ASTM D 4533): 85 lbs.
    - i. UV Resistance (ASTM D 4355): 70%
  - 2. ModifiedPLUS® G100s/s non-exposed SBS modified bitumen flashing supplied by Henry Company having a sanded upper and lower surface for mopping or cold adhering to substrate and to receive mop or cold adhered cap sheets having the following physical properties in accordance with CGSB 37-GP-56M, Type 2, Class C, Grade 1:
    - a. Thickness: 2.0mm (80 mils)
    - b. Breaking strength: MD 631 N (142 lbf) XD 581N (131 lbf)
    - c. Ultimate elongation: MD 17% XD 21%
    - d. Low temperature flexibility at -10°C (14°F): No sign of cracking and pass water tightness
  - 3. 990-31 continuously extruded flexible twin wall board made of polypropylene copolymer supplied by Henry Company having the following physical properties:
    - a. Thickness 2mm (80 mils)
    - b. Tensile Strength Yield Point: 32 kg/cm<sup>2</sup>
    - c. Tensile Strength Point of Failure: 242 kg/cm<sup>2</sup>
    - d. Elongation: 167%
    - e. Compression Strength (ASTM D695): 0.54 kg/cm<sup>2</sup>
    - f. Impact Strength at 32 degrees F (0 degrees C): 8.9 kg/cm
  - 4. Prefabricated drain board:
    - a. Refer to 2.02 Products I. Prefabricated Drain Boards
  - 5. Rigid insulation board:
    - a. Refer to 2.02 Products J. Insulation
  - 6. Asphaltic rigid board:
    - a. For use when overburden will consist of asphalt concrete pavement
    - b. Minimum 1/8" thick semi-rigid asphaltic protection board shall be used.
    - c. Contact Henry Technical Services for product recommendations and installation procedures.
- G. Termination Sealant:

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1. Termination Sealant shall be HE925 BES Sealant supplied by Henry; a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:
  - a. Compatible with roofing and waterproofing membranes and substrate,
  - b. Complies with Fed. Spec. TT-S-00230C, Type II, Class A,
  - c. Complies with ASTM C 920, Type S, Grade NS, Class 35,
  - d. Elongation: 450 – 550%,
  - e. Remains flexible with aging,
  - f. Seals construction joints up to 1 inch wide.
- H. Securement Bars (By Others):
  1. Securement bars shall be continuous aluminum, stainless steel or galvanized metal, 1/8 inch x 1 inch in size and shall be pre-drilled for non-corrosive screw attachment on a maximum of 8 inches centers.

SPEC NOTE: Choose from the following Henry DB drainage composite boards. Where incorporation of an air layer between the insulation and concrete is desired Henry recommends the use of DB200.

- I. Prefabricated Drain Boards
  1. Henry DB Drainage Composite two-part prefabricated geo-composite drain board consisting of a formed polystyrene core covered on one side with a woven or non-woven polypropylene filter fabric:
    - a. Henry DB 200: For vertical and horizontal installations, shallower depths.
    - b. Henry DB 500: For vertical installations requiring high compressive strength and high flow capacity.
    - c. Henry DB350 OR DB 650: For horizontal applications requiring high compressive strength, high flow capacity & woven geotextile. Suitable for use under topping slab in split slab applications.

SPEC NOTE: Choose compressive strength in accordance with project requirements.

- J. Insulation
  1. Extruded Polystyrene rigid board insulation meeting the following properties:
    - a. ASTM C-578, Type VI or VII
    - b. ASTM E96 Water vapor permeance: 1.0 perms
    - c. Minimum water absorption by volume per ASTM C-272 of 0.1%
    - d. Minimum compressive strength to ASTM C-1621 shall be [40], [60] or [100] psi.
    - e. Available manufacturers:
      1. The DOW Chemical Company
      2. Owens Corning

SPEC NOTE: Filter fabric is optional. Choose from the following products:

- K. Filter Fabric (Optional)
  1. Henry Filter Fabric consisting of non-woven geotextile made up of polypropylene fibers
    - a. N03 Filter Fabric
    - b. N04 Filter Fabric
- L. Roof Ballast
  1. Precast Plaza Deck Pavers: Heavyweight, hydraulically pressed, concrete units, square edged, factory cast for use as roof pavers; absorption not greater than 5 percent, ASTM C140; no breakage and maximum 1 percent mass loss when tested for freeze-thaw resistance, ASTM C78 and as follows:
    - a. Size: 24 x 24 x 2 inches.
    - b. Compressive Strength: 7500 psi, minimum ASTM C 140
    - c. Colors and Textures as selected by architect
    - d. Pedestal Supports: Pedestal supports for pavers shall be in accordance with the paver manufacturer recommendations.
    - e. Available Manufacturers:

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1. Hanover Architectural Products, Inc.
2. Wausau Tile, Inc. Terra-Paving Div.
3. Westile
2. Concrete Pour Topping (By Others)
  - a. Contact Henry for waterproofing assembly recommendations.
3. Asphaltic Concrete Overlay (By Others)
  - a. Contact Henry for waterproofing assembly recommendations.

SPEC NOTE: WATERPROOFING MEMBRANE INTEGRITY TEST. As a requirement for meeting certain warranty conditions, the waterproofing membrane must be tested for leaks. The completed waterproofing system may be tested by either flood testing the area or Electric Vector Testing.

2.06 WATERPROOFING MEMBRANE INTEGRITY TEST

- A. Electric Vector Testing Quality Assurance Components (Alternate to flood testing)
  1. Provide electrical wiring, and other components necessary for a testing agency to perform integrity testing of waterproofing membrane.

**PART 3: EXECUTION**

3.01 EXAMINATION

- A. The waterproofing contractor shall examine and determine that surfaces and conditions are ready to accept the work of this section. Commencement of the work or any parts thereof shall mean installer acceptance of the substrate.

3.02 PREPARATION

- A. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar, frost or other contaminants. Fill spalled areas in substrate to provide an even plane and remove spalling concrete. Remove curing compounds or any foreign matter detrimental to the adhesion of the primary waterproofing membrane or membrane flashings.
- B. Prefabricated expansion joint assemblies should be in place prior to the application of the primary waterproofing assembly.

SPEC NOTE: Edit acceptable substrates per project requirements

- C. Acceptable substrates:
  1. Cast-in-Place Concrete/Composite Deck
    - a. **Refer to Section 1.03A.1 of this specification**
  2. Precast Concrete
    - a. **Refer to Section 1.03A.1 of this specification**
  3. Sheathing over Metal Deck [Steel Deck]
    - a. The contractor shall review and determine that all surfaces are in accordance with Henry recommendations to receive the membrane and report any discrepancies prior to installing the waterproofing system.
    - b. Seal substrate joints
      1. Center 12 inch wide crack treatment membrane over joint
      2. Embed crack treatment membrane in 60 mils cold fluid applied waterproofing prior to installation on waterproofing membrane.
  4. Refer to manufacturer published literature.

3.03 INSTALLATION OF WATERPROOFING MEMBRANE

SPEC NOTE: For enhanced performance at penetrations, perimeter-flashing, and areas that require UV resistance and traffic-ability, select liquid applied flashing system.

- A. Detailing/Flashing:
  1. All detailing and flashing shall be completed prior to installation of field waterproofing



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- membrane.
- 2. All detailing and flashing shall be installed per manufacturer standard details.
- 3. Flashing membranes:
  - a. Liquid-Applied Flashing System: Contact manufacturer for installation recommendations.
- 4. Sheet flashing membranes: refer to 2.02 B
- B. Application of Cold Fluid Applied Waterproofing Membrane:
  - 1. Ensure deck is ready to receive cold fluid applied waterproofing membrane in accordance with published literature.
  - 2. Apply first layer of cold fluid applied waterproofing membrane evenly to a minimum thickness of 60 mils to form a continuous monolithic coating over horizontal and vertical surfaces including previously reinforced areas.
  - 3. Apply polyfabric reinforcing sheet and firmly press into first layer of cold fluid applied waterproofing. Overlap polyfabric reinforcing sheet approximately 1-2 inches ensuring that a layer of cold fluid applied waterproofing membrane is present between each sheet.
  - 4. Apply second layer of cold fluid applied waterproofing membrane over the polyfabric reinforcing sheet to a minimum thickness of 60 mils providing a total thickness of 120 mils.

SPEC NOTE: Select from the following protection course options. Exception: When overburden will consist of asphaltic concrete pavement, a minimum 1/8" thick, semi-rigid asphaltic protection board shall be used.

- C. Installation of Protection Course:
  - 1. Protection course
    - a. Non-woven geotextile protection fabric:
      - 1. Install onto cold fluid applied waterproofing membrane while still tacky.
      - 2. Where protection course is used lap membrane 2 inches on side laps and 6 inches on end laps.
      - 3. Install the protection course membrane in full continuous sheets in a shingle pattern starting at the low points or drains location. Stagger all end laps.
    - b. SBS modified bitumen membrane:
      - 1. Install onto cured cold fluid applied waterproofing membrane.
      - 2. Where protection course is used lap membrane 2 inches on side laps and 6 inches on end laps.
      - 3. Install the protection course membrane in full continuous sheets in a shingle pattern starting at the low points or drains location. Stagger all end laps.
    - c. Extruded flexible twin wall board made of polypropylene copolymer:
      - 1. Install onto cured cold fluid applied waterproofing membrane.
      - 2. Install protection course with manufacturer recommended adhesive.
      - 3. Contact manufacturer for recommended installation procedures.
    - d. Prefabricated drain board:
      - 1. Refer to Section 3.05
      - 2. Contact manufacturer for recommended installation procedures.
    - e. Insulation:
      - 1. Refer to Section 3.06
      - 2. Contact manufacturer for recommended installation procedures.
    - f. Asphaltic Concrete Pavement
      - 1. Contact Henry Technical Services for product recommendations and installation procedures.
  - 2. The waterproofing assembly shall be protected from damage and UV in accordance with manufacturer published literature.

SPEC NOTE: WATERPROOFING MEMBRANE INTEGRITY TEST. As a requirement for meeting certain warranty conditions, the waterproofing membrane must be tested for leaks. The completed waterproofing system may be tested by either Electronic Vector Testing or flood testing. Henry Company recommends Electronic Vector Testing in lieu of flood testing

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3.04 WATERPROOFING MEMBRANE INTEGRITY TEST

- A. Electronic Vector Testing (EVT) (Alternate to Flood Test):
  - 1. EVT to be conducted upon the completion of the waterproofing assembly and all associated terminations prior to placement of overburden.
  - 2. Contact pre-approved test provider several weeks in advance to coordinate schedule.
  - 3. In the event of a breach of the membrane, repair and retest the system in accordance with project specifications.
  - 4. Report results of testing to the Architect [Consultant] & submit results with the warranty application to Henry Warranty department.
  - 5. No other Work is to proceed without prior direction from the Architect [Consultant].
- B. Flood Test:
  - 1. Flood test to be conducted upon the completion of the waterproofing assembly and all associated terminations and prior to placement of overburden.
  - 2. Provide temporary stops and plugs for the roof drains within the test area.
  - 3. Flood test with minimum 2 inches of water for no less than 24 hours.
  - 4. In the event of a breach of the membrane, repair, and retest the system for no less than 24 hours.
  - 5. Remove temporary stops and plugs.
  - 6. Report results of testing to the Architect [Consultant] & submit results with the warranty application to Henry Warranty department.
  - 7. No other Work is to proceed without prior direction from the Architect [Consultant].

SPEC NOTE: For Miami Dade installation requirements contact Henry Company.

3.05 INSTALLATION OF DRAINAGE COMPOSITE

- A. Install drainage composite as indicated on the drawings and in accordance with manufacturer published literature.
- B. Overlap core flange with core flange of adjacent sheet a minimum of 1 inch and top layer of filter fabric a minimum of 2 ½ inches.
- C. Cut core and fabric to fit tightly around penetrations.
- D. Install Drainage Composite up vertical flashing to the intended finish grade.

3.06 INSTALLATION OF INSULATION

- A. Install drainage composite as indicated on the drawings and in accordance with manufacturer published literature.
- B. Loose lay and tightly butt all insulation boards together with a maximum 3/8" wide gap between boards and 3/4" wide gap at projections and penetrations.
- C. Stagger the end joints of the insulation.
- D. Cut the insulation to fit closely to all cants, protrusions and obstructions.
- E. When installing multiple layers of insulation, the thickest layer is to be installed first. Install the second layer with joints staggered with the layer below.

SPEC NOTE: Filter fabric optional. Coordinate with section 2.02 L.

3.07 INSTALLATION OF FILTER FABRIC

- A. Install filter fabric over insulation and overlap side and ends lap six inches. Do not use lengths of less than 6 feet.
- B. Cut filter fabric to fit tightly at penetrations, roof drains, and other openings.
- C. Extend material up vertical junctures where required.
- D. Provide temporary ballasting over filter fabric to prevent displacement until permanent covering material installed.

3.08 INSTALLATION OF PAVERS

- A. Installation of pavers to be completed after placement of curbs details as indicated on drawings.
- B. Cut pavers to fit irregularly shaped areas and around protrusions as required. Install according to manufacturer's instructions.
- C. Accurately align and place concrete pavers on pedestals to maintain a level upper surface

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with adjacent units.

3.09 FIELD QUALITY CONTROL

A. Final Observation and Verification:

1. Prior to overburden installation, final inspection of waterproofing assembly shall be carried out by the owner's representative, the contractor, or manufacturer as required by warranty. Contact Manufacturer for warranty requirements.

3.10 CLEAN-UP

- A. Promptly as the work proceeds, and upon completion, clean up and remove from the premises all rubbish and surplus materials resulting from the foregoing work.
- B. Clean to the consultant's approval, soiled surfaces, spatters, and damage caused by work of this Section.
- C. Check area drains to ensure cleanliness and proper function, and remove debris, equipment and excess material from the site.

END THIS SECTION